BOOK REVIEW

EMILY MONOSSON. 2012. **Evolution in a Toxic World: How Life Responds to Chemical Threats.** (ISBN-13: 978-1-59726-976-6, hbk.). Island Press, 1718 Connecticut Ave., NW, Suite 300, Washington, DC 20009, U.S.A. (**Orders:** http://islandpress.org/index.html). $35.00 hbk., $29.95 pbk., 240 pp., 10 figures, notes, index, 6" × 9".

"The best way to envisage the situation is as follows: the environment presents challenges to living species, to which the latter may respond by adaptive genetic changes."—*Theodosius Dobzhansky.*

… And this is exactly what Emily Monosson discusses throughout the ten chapters of *Evolution in a Toxic World: How Life Responds to Chemical Threats.* This 222-page book is a thought-provoking summary of an important but often ignored subject matter, environmental toxicology. The introduction (Chapter 1) is a fascinating overview of the subject matter. Monosson opens her introduction with two powerful sentences: "All of life is chemical. But not all chemicals are compatible with life." Think about that contrast! The author gives an overview of the four sections of the book: 1) Nature's Toxicants (everything is a poison in the right dose), 2) Evolutionary History of Toxicology, 3) Toxic Evolution in Action, and 4) Looking Forward by Looking Back.

Chapter 2—Shining a Light on Earth's Oldest Toxic Threat, looks at UVR, a highly energetic and destructive force to be reckoned with. We all know metals like arsenic and the secondary plant metabolite strychnine are poisonous, but Monosson throws at the reader chemical toxicants that most of us don't think about, like oxygen. Monosoon points out, "we cannot live without it, yet every day we struggle to coexist with this highly reactive and potentially toxic chemical." Oxygen is discussed in detail in Chapter 3—When Life Gives you Oxygen, Respire. Chapter 5 looks at the many toxic metals that life deals with. Chapter 6 discusses chemical warfare … the battle to protect and to survive. The combatants? Plants and animals. Sounds like a sci-fi movie, and it very well could be. Maybe people would watch and then take notice of the thousands of chemicals in our environment. If you like war, then Chapter 6 is a captivating account of this historical battle and challenge to stay alive; it's my favorite chapter in the book. This is not to say that the rest of the book is not interesting. Quite the contrary, Chapter 7—Sensing Chemicals is enticing, Chapter 8—Coordinated Defense is inviting, Chapter 9—Toxic Evolution is captivating, and Chapter 10 is all about toxic overload: "How will life's toxic defense mechanisms respond to industrial age chemicals?" And yes, there are many. "In 2009, the Chemical Abstracts Service, which catalogs and tracks all known chemicals, announced the registration of its fifty-millionth 'novel' chemical—the last ten million chemicals having been registered over the preceding nine months. There are plenty more novel chemicals to be found." In the conclusion, Monosson writes that this toxic world we live in is challenging to each and every human. We do live in a sea of toxic chemicals. "Life on Earth is now subject to a virtual onslaught of chemicals associated in one way or another with human activity. We are a society built on chemicals, and there is no turning back." Monosson says that we must strive to better understand how chemicals affect wildlife and human health. "We have to do so. There is no higher ground, no corner on earth where life can escape the influence of toxic chemicals. The choice must not be to 'evolve or die.'"—*Barney Lipscomb, Botanical Research Institute of Texas, 1700 University Dr., Fort Worth, Texas 76107-3400, U.S.A.*